HF-8000

Most advanced SDR, multi-adaptive IP HF radio system for digital and analog voice and high-speed data communications

Elbit Systems™
C4I and Cyber

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The HF-8000 radio system – designed to surpass the traditional limitations of HF communications – delivers superior HF performance, maintaining uninterrupted data and voice communications on the battlefield. Incorporating a wide range of proprietary tactical antennas, the HF-8000 provides highly-reliable and secure voice and high-speed data, IP networking, and advanced COMSEC and ECCM functions. In addition, the system is backward interoperable with the HF-6000, and can be fully integrated with C⁴I systems. The radio system is available in multiple configurations, including lightweight man-pack, vehicular, ship, fixed and high-power strategic stations.

Multi-adaptive – The HF-8000 is well-positioned to adapt to even the harshest battlefield scenarios. The system's advanced capabilities include robust vocoder and SMS capabilities; frequency-hopping over the entire frequency band, providing dependable operations even in densely-jammed environments; specially designed tactical HF antennas, enabling rapid and reliable automatic link establishment; and a high probability of error-free data transmission supported by a built-in high rate data modem. The HF-8000 has the ability to transmit messages to individuals, groups or all network members (selective calling). An easy-to-navigate, menu-based graphic display offers user-friendly visual alerts and up-to-the-minute radio status information.

Antenna Solutions

Elbit Systems offers a variety of antennas based on operational needs. The proprietary NVIS HLA and HTDA tactical antennas solutions are designed to overcome "skip zone" communications problems and provide continuous coverage from zero to thousands of kilometers.

The NVIS antennas are available for manpack, vehicular, base and marine configurations.

Configurations

The HF-8000 radio system is available for tactical configurations in portable manpack, vehicular, marine, fixed station and strategic sites configurations.

Key Features

- **ALE** – Offers increased tactical efficiency, responsiveness and operational ease. The HF-8000 radio system provides 2G ALE per MIL-STD-188-141B and 3G ALE per STANAG 4538 for interoperability with other allied stations.
- **Digital squelch** – Eliminates false alarms and misdetections by filtering out distracting noise traditionally associated with HF communications.
- **Selective calling** – Allows the operator to direct a message to an individual member, a group, or an entire network. Selective calling is applicable in CLEAR, COMSEC, frequency-hopping and frequency management modes.
- **Dual frequency –** Supports reception and transmission over different frequencies, eliminating channel overload and poor link quality.
- **Data applications**
  - **High-rate modem** – Transmits data at high speeds even under harsh communications conditions by using powerful error detection techniques and correction codes. The modems utilize a variety of wave forms that are compatible with MIL-STD-188-110B up to 19.2Kbps, STANAG 4539, MFSK and STANAG 5066 protocol for data and IP network application.
  - **SMS** – Allows edited/preprogrammed short messages to be transmitted and received by net stations at very poor link conditions. Burst messages are supported by a powerful error correction code, along with an acknowledge signal upon successful message reception.
  - **Adaptive data transmission** – Increases effective data throughput for a typical HF link by matching the data transmission parameters to the quality of the HF link.
- **COMSEC** – AES 256 digitally encrypted techniques ensure secured voice, data and SMS communications. In addition, voice communications can be scrambled in frequency, time and phase domains.
- **ECCM** – Full-band frequency-hopping based on STANAG 4444, assuring reliable and successful operations in densely-jammed environments. The HF-8000 employs an automatic synchronization process that avoids the need for vulnerable master stations. It delivers immediate operational readiness with no time-consuming synchronization processes.
- **GPS** – Internal GPS providing location and situational awareness data for C⁴I applications.
- **Vocoder** – Enables higher voice quality with the built-in Mixed Excitation Linear Prediction (MELP) coder. The utilization of speech compression methods tailored to the HF channel conditions, forward error correction (FEC) and frame synchronization provides improved intelligibility.

- Software defined radio (SDR) ready for future growth
- HF house-compliant
- Robust vocoder operating at +3db SNR link
- Robust SMS capability operating at -8db SNR link
- High-speed data transmission of up to 19.2Kbps in all radio configurations
- AES 256 encryption for voice, data and SMS
- RoIP interface for control, data and voice
- Patented HF NVIS antennas – the key for reliable HF communications
- Lightest manpack system in its class (less than 4kg)
- Interoperability with HF-6000 radio system

Optional Ancillaries and Accessories

Elbit Systems offers a variety of optional accessories depending on the configuration and the client's operational requirements.

- **Power sources**
  - **Batteries** – Rechargeable lithium Ion batteries
  - **Battery chargers** – Electrical, hand-crank and solar
  - **Power supplies** – AC/DC and DC/DC
- **Antennas** – A variety of antennas for all configurations (whip, dipole, NVIS HLA and HTDA)
- **Audio** – Standard and control handsets, headsets and loudspeakers
- **Remote control** – A variety of solutions depending on required operational scenarios
- **Software application** – Radio parameters programming, MUF, networks design package, data communications, STANAG 5066 etc.

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Technical Specifications

General	
Frequency range	1.5000 to 29.9999 MHz
Channels	2,850,000 at 10 Hz spacing
Preset Channels	100
Modes of Operation	
Clear	Fixed frequency, dual frequency, MIL-STD 2G ALE and STANAG 3G ALE
COMSEC	Fixed frequency, dual frequency; MIL-STD 2G ALE and STANAG 3G ALE
ECCM	Frequency-hopping based on STANAG 4444
Type of Traffic	Analog voice, digital voice, data, SMS and CW
Modulation	USB, LSB, 2-ISB AME
Built-In-Test (BIT)	On-line and operator initiated
Environmental	
Operating Temperature	-40°C to +65°C
Environmental Conditions	Per MIL-STD-810 E/F/G
Immersion	1 meter
Configuration Power Output	
PRC-8020	5W/10W/20W
VRC-8020	5W/10W/20W
VRC-8200	20W/50W/125W
GRC-8400	100W/200W/400W
GRC-8600	200W/500W/1000W
GRC-8800	1000W/2000W/4000W
Automatic Link Establishment (ALE)	
ALE Types	2G ALE per MIL STD 188-141B and 3G ALE per STANAG 4538
ALE Nets	Up to 16 predefined nets
Frequency Tables	100
Frequency Table Length	10

Voice	
Analog and Digital Vocoder	
Rates	800bps (optional 1200bps)
Encryption	Digital encryption AES 256
Modem type	Single tone
Data Applications	
Modem Types	MIL-STD-188-110/B up to 19.2Kbps STANAG 4539, and MFSK
Communications Protocol	STANAG 5066
SMS	Edited and preformatted
Special Features	Built-in data terminal
Frequency-Hopping (ECCM)	
Communications Type	Voice and data based on STANAG 4444
Technique	Full-band frequency-hopping and sub-band frequency-hopping
Synchronization	Fast and automatic; no need for periodic resynchronization or master station
Voice	Vocoder 800bps (optional 1200bps)
Data	Up to 2400bps
Encryption (COMSEC)	
Voice	Digital and analog
Data, SMS	Digital encryption
Data and Vocoder	AES 256
Antennas	
Manpack	Whip, dipole and fast deployed HTDA
Vehicular	Whip, NVIS HLA and fast deployed HTDA
Marine	Whip, and NVIS HLA
Base	HTDA and broadband dipole

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